

National Park and there was no significant poaching of buffalo since 2004. On Bhutan side, patrolling has started in recent years thus providing some security. A well-equipped and active anti-poaching camp at Gabhorukunda on the Bhutan side is strongly recommended, which should not be near the water spot (to avoid disturbance to the animals) so that in future the wild buffaloes can be seen again in large herds during daytime coming to the waterbody.

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REFERENCES

- BLOWER, J.H. (1986): Nature conservation in Bhutan: project findings and recommendations. FO: DP/BHU/83/022. FAO, Rome, Italy. 55 pp.
- CHOUDHURY, A.U. (1989): S.O.S. Manas! *The Sentinel*, 7 May.
- CHOUDHURY, A.U. (1994): The decline of the wild water buffalo in north-east India. *Oryx* 28(1): 70-73.
- CHOUDHURY, A.U. (2006): Manas – looking back, looking forward. *Sanctuary Asia* 26(1): 22-29.
- CHOUDHURY, A.U., A. SWARGIARY, C.R. BHOBORA & B. SAIKIA (2008): Census of Wild Water Buffalo in Manas National Park. Final Report. Barpeta Road, India: The Field Directorate, Manas National Park, and Guwahati, India: The Rhino Foundation for Nature in NE India. 14 pp.
- CORBET, G.B. & J.E. HILL (1992): The Mammals of the Indo-Malayan Region: A Systematic Review. Oxford University Press, Oxford, UK. 488 pp.
- GEE, E.P. (1964): The Wild Life of India. Collins, London. 192 pp.
- GREEN, M.J.B. (COMPILED) (1993): Nature Reserves of the Himalaya and the Mountains of Central Asia. IUCN and Oxford University Press, Oxford, UK. 471 pp.
- IUCN (2007): IUCN Red List of Threatened Animals. Gland, Switzerland: IUCN.
- THE MAHARAJAH OF COOCH BEHAR (1908): Big game shooting in eastern and north eastern India (originally published as "Thirty-seven years of big game shooting in Cooch Behar, The Duars & Assam"). Reprint 1985. Delhi: Mittal Publications.
- WANGCHUK, T., P. THINLEY, K. TSHERING, C. THSERING & D. YONTEN (2004): A Field Guide to the Mammals of Bhutan. Thimphu: Department of Forestry, Ministry of Agriculture, Royal Government of Bhutan. 179 pp.

4. TWO NEW RECORDS OF DISTRIBUTION OF FOUR-HORNED ANTELOPE *TETRACERUS QUADRICORNIS*

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The Four-horned Antelope or Chowsingha *Tetracerus quadricornis* is a lesser known antelope endemic to the Indian subcontinent (Krishna *et al.* 2008), and is one of the six antelope species found in India (Rahmani 2001). It is listed under Schedule I of the Wildlife Protection Act, 1972, and also declared as Vulnerable under the IUCN Red list (IUCN 2008). Rice (1991) carried out a questionnaire survey to assess its range and distribution, and reported the species from 83 sites in India. Further, in a literature review Krishna *et al.* (2009) report it from 104 sites from India. Another study by

Sharma (2006) reports the distribution of Four-horned Antelope from 122 sites. Within Karnataka, it was already confirmed to be found in Nagarahole, Bandipur, Biligiri Rangaswamy Temple sanctuaries and other areas (Karanth 1986; Karanth and Nichols 2000; Sharma 2006; Krishna *et al.* 2008). Here we present two observations of the Four-horned Antelope from areas where it is not reported in previous literature (Karanth 1986; Rice 1991; Karanth and Nichols 2000; Sharma 2006; Krishna *et al.* 2009) in the state of Karnataka.

The first observation is from Jogimatti Reserve Forest (JRF) (14° 9' 53" N; 76° 24' 54" E, 107.18 sq. km) in Chitradurga district and the second report is from Rangayyanadurga State Forest (RSF) (14° 39' 30" N; 76° 10' 10" E, 77.23 sq. km) in Davanagere district. Both the locations fall in southern Karnataka and are dominated by tropical dry deciduous and thorny open scrub forests.

At JRF an individual was seen and was clearly identified by us by its body colour, size and behaviour. The animal had a dull reddish-brown colour above and was white below. The white rings above hooves were distinct. We observed the animal for about thirty minutes from an adjacent small hillock. The animal initially in an open patch moved into thickets browsing on leaves of short shrubs. The animal would move continuously and not be stationary. Our previous field knowledge and observations of Four-horned Antelope helped in identifying the animal and distinguish it from the Barking deer *Muntiacus muntjak* with which it is generally mistaken. The animal was later confirmed by referring to Prater (1998).

At RSF, droppings of Four-horned Antelope were seen and distinguished by its oblong shape and heaped middens. The locals identified the droppings as belonging to 'Kondurkuri', Kannada name for Four-horned Antelope. The droppings were small and elongated, and were likely of the Four-horned Antelope. Extensive interactions with locals and forest department staff confirmed the absence of Chinkara (*Gazella gazella*) and Barking deer in the area. The middens were found in scantily forested habitat. During another visit, a midden with droppings of two distinct sizes, possibly belonging to an adult and a juvenile Four-horned Antelope, was observed at RSF. Due to its undulating terrain, the area is unlikely to support Blackbuck that need open grasslands and avoid thick cover (Jhala 1993, 1997). A few days later the second author, along with another wildlife enthusiast

witnessed an individual Four-horned Antelope that had strayed into a village, confirming the presence of Four-horned Antelope at RSF. These sightings contribute towards the distribution knowledge of this species.

Changes in habitat and invasive plant species, especially *Lantana camara* can affect the presence of Four-horned Antelope (Krishna *et al.* 2008). Four-horned Antelope is also reported to be hunted at other sites and in RSF. Protection from anthropogenic pressures, appropriate management of human-induced fire and forest-extraction activities could all be critical for conservation of this species (Sharma 2006; Krishna *et al.* 2008).

The isolated reserved forests of Karnataka are fast being degraded by developmental activities, especially wind farms. Hence, these areas need to be conserved if species such as Four-horned Antelope are to be protected on long-term basis, and both these locations have potential for sustaining small populations. However, JRF is already fragmented due to installation of 118 wind turbines. Wind farms alter wildlife habitats through linear fragmentation, such as roads, electric lines, increased human movement and noise pollution (Abbasi and Abbasi 2000). Loss and fragmentation of habitats are known to be serious threats to Four-horned Antelope (Sharma 2006; Krishna *et al.* 2008). Though there is no documented evidence of direct impacts of wind turbines on Four-horned Antelope, the species being cryptic and shy (Sharma 2006) can be affected by noise of wind turbines and increased human activity.

In this background, it is more relevant that RSF is given the status of a wildlife sanctuary, as Protected Areas have greater prospect to protect threatened species (van Schaik *et al.* 2002; Hilborn *et al.* 2006). There are a few protected areas dedicated for the purpose of saving species of the drier plains, and this move could be a unique initiative in Karnataka.

REFERENCES

- ABBASI, S.A. & N. ABBASI (2000): The likely adverse environmental impacts of renewable energy sources. *Applied Energy* 65(1-4): 121-144.
- HILBORN, R., P. ARCESE, M. BORNER, J. HANDO, G. HOPCRAFT, M. LOIBOOKI, S. MDUMA & A.R.E. SINCLAIR (2006): Effective enforcement in a conservation area. *Science* 314(5803): 1266.
- IUCN (2008): 2008 IUCN Red list of threatened species. <www.iucnredlist.org>. Downloaded on September 1, 2008.
- JHALA, Y.V. (1993): Predation on blackbucks by wolves in Velavadar National Park, Gujarat, India. *Conservation Biology* 7(4): 874-881.
- JHALA, Y.V. (1997): Seasonal effects on the nutritional ecology of blackbuck *Antelope cervicapra*. *Journal of Applied Ecology* 34(6): 1348-1358.
- KARANTH, K.U. (1986): Status of wildlife and habitat conservation in Karnataka. *J. Bombay Nat. Hist. Soc.* 83(supplement): 166-179.
- KARANTH, K.U. & J.D. NICHOLS (2000): Ecological Status and Conservation of Tigers in India. Final technical report to the Division of International Conservation, US Fish and Wildlife Services: Wildlife Conservation Society, New York, USA and Centre for Wildlife Studies, Bangalore, India.
- KRISHNA, Y.C., J. KRISHNASWAMY & N.S. KUMAR (2008): Habitat factors affecting site occupancy and relative abundance of four-horned antelope. *Journal of Zoology* 276(1): 63-70.
- KRISHNA, Y.C., P. CLYNE, J. KRISHNASWAMY & N.S. KUMAR (2009): Distributional and ecological review of the four horned antelope, *Tetracerus quadricornis*. *Mammalia* 73(1): 1-6.
- PRATER, S.H. (1998): The Book of Indian Animals. Bombay Natural History Society and Oxford University Press, India. Pp. 271.
- RAHMANI, A.R. (2001): Country reports, India In: Mallon, D.P. & S.C. Kingswood (Eds): Antelopes: Global Survey and Regional

- Action Plans. IUCN Species survival commission, Gland, Switzerland.
- RICE, C.G. (1991): The status of four-horned antelope *Tetracerus quadricornis*. *J. Bombay Nat. Hist. Soc.* 88(1): 63-66.
- VAN SCHAİK, C., J. TERBORGH, L. DAVENPORT & M. RAO (2002): Making parks work: Past, present and future. Pp. 468-481. *In*: Terborgh, J., C. van Schaik, L. Davenport & M. Rao (Eds): Making parks work: Strategies for preserving tropical nature. Island Press, Washington, DC, USA.
- SHARMA, K. (2006): Distribution, status, ecology and behaviour of the four-horned antelope (*Tetracerus quadricornis*). University of Mumbai, India.
- TERBORGH, J. & C. VAN SCHAİK (2002): Why the world needs parks. Pp. 3-14. *In*: Terborgh, J., C. van Schaik, L. Davenport & M. Rao (Eds): Making Parks Work: Strategies for Preserving Tropical Nature. Island Press, Washington, DC, USA.

5. FIRST RECORD OF MERLIN *FALCO COLUMBARIUS PALLIDUS* FROM MAHARASHTRA, INDIA

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The Merlin *Falco columbarius* was first described by Linnaeus in 1758. The Merlin is a rare bird in India (Grimmett *et al.* 1998) and a rare winter migrant to north India (Naorji 2006), but is classed globally as Least Concern (BirdLife International 2001).

There are two races of this species occurring in India: *insignis* and *pallidus* (Naorji 2006). Both the races are rare winter visitors to northern India, specifically Jammu and Kashmir, Punjab, Rajasthan, Haryana, Gujarat, and Arunachal Pradesh (Naorji 2006). Race *pallidus* is rarer than *insignis* (Naorji 2006), reported as winter visitor to Jammu and Kashmir, passage migrant and scarce winter visitor to western and central Ladakh (Meinertzhagen 1927; Williams and Delany 1986; Mallon, 1987). It was observed in late August 2000 in the Nubra valley near Diskit on Hunda road and in Changthang between Demchok and Fukche in mid-August 2002 (Naorji and Sangha 2004).

Little is known about the Merlin in the Subcontinent, except its famous hunting methods (Naorji 2006). It has been described as a bold and dashing falcon inhabiting open country habitats (Grimmett *et al.* 1998).

We report here sighting of the Merlin, race *pallidus* (immature female), in an uninhabited open country just outside Bhimashankar Wildlife Sanctuary in Maharashtra.

We were birding around that area on February 16, 2007, at 0930 hrs, and came across a small raptor perched on an electric pole, overlooking open scrub vegetation and a rocky terrain. We mistook the bird for a Common Kestrel, till we noticed a pale collar on the hind neck and buff bars on the uppertail. We noticed it scanning the area, sometimes bobbing the head up and down, disturbed by our presence it shifted its perch and flew to another electric pole.

The habitat here was mostly scrub vegetation, there were many rocks and a few clumps of grass. There were electric wires over this patch of open land, which served as a perch for many birds of prey.

This is the first record of the Merlin from Maharashtra. We can only speculate whether it was a vagrant, a passage migrant or a resident. But it is sure that some sincere work needs to be done on the raptors of Bhimashankar to ensure their long term survival.

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REFERENCES

- BIRDLIFE INTERNATIONAL (2001): Threatened Birds of Asia: The Birdlife International Red Data Book. Cambridge, UK: Birdlife International.
- GRIMMETT, R., T. INSKIPP & C. INSKIPP (1998): Birds of the Indian Subcontinent. Oxford University Press. Pp. 548-549.
- MALLON, D.P. (1987): The Winter Birds of Ladakh. *Forktail* 3: 27-41.
- MEINERTZHAGEN, R. (1927): Systematic results of birds collected at high altitudes in Ladakh and Sikkim. Part II. *Ibis* 3(4): 571-633.
- NAOROJI, RISHAD (2006): Birds of Prey of the Indian Subcontinent. Om Books International. _Merlin, Falconidae. Pp. 583-587.
- NAOROJI, R.K. & H. SANGHA (2004): Project Golden Eagle. Raptor Surveys in Ladakh 1997-2003. (In Collaboration with the Indian Army).
- WILLIAMS, C. & S. DELANY (1986): Migration through the north west Himalaya – some results of the Southampton University, Ladakh Expedition Part 2. *Oriental Bird Club Bulletin* 3: II-16.